IN THE CLAIMS:

CLAIMS

1. (Currently Amended) A fuel cell power plant comprising:

a fuel cell stack ~~(1)~~ comprising fuel cells which generate electric power under a supply of hydrogen and oxygen;

~~an oxygen supplying mechanism (11) which supplies oxygen to the fuel cell stack (1);~~

~~parameter detecting means (19, 20) which detects a parameter for determining if moisture in the fuel cell stack is frozen;~~

~~determining means (16, S1) which determines if the moisture in the fuel cell stack is frozen based on the parameter; and~~

~~causing means (16, 27, S3, S6) which causes the fuel cell stack (1) to perform intermittent electric power generation when the moisture in the fuel cell stack (1) is frozen.~~

a mechanism which supplies oxygen to the fuel cell stack;

a sensor which detects a parameter for determining if moisture in the fuel cell stack is frozen; and

a controller functioning to:

determine if the moisture in the fuel cell stack is frozen based on the parameter; and

cause the fuel cell stack to perform intermittent electric power generation when the moisture in the fuel cell stack is frozen.

2. (Currently Amended) The fuel cell power plant as defined in Claim 1, wherein the ~~causing means (16, 27, S3, S6) causes the oxygen supplying mechanism (11) to continuously supply oxygen to the fuel cell stack (1) when causing the fuel cell stack (1) to perform intermittent electric power generation.~~ controller further functions to cause oxygen supplying mechanism to continuously supply oxygen to the fuel cell stack when causing the fuel cell stack to perform intermittent electric power generation.

3. (Currently Amended) The fuel cell power plant as defined in Claim 1, wherein the ~~parameter detecting means (19, 20) comprises a sensor (19, 20) which detects a parameter for determining if moisture in the fuel cell stack is frozen, and the determining means (16, S1) and the causing means (16, 27, S3, S6) comprises a controller (16) functioning to determine if the moisture in the fuel cell stack (1) is frozen based on the parameter (S1), and cause the fuel cell stack (1) to perform intermittent electric power generation while causing the oxygen supplying mechanism (11) to continuously supply oxygen to the fuel cell stack (S3, S6)~~ fuel cell stack generates electric power in response to a power requirement, the power plant further comprises a mechanism which regulates the power requirement, and the controller further functions to control the regulating mechanism, when the moisture in the fuel cell stack is frozen, to cause the fuel cell stack to perform the intermittent electric power generation.

4. (Currently Amended) The fuel cell power plant as defined in Claim 3, wherein the fuel cell stack ~~(1) generates electric power in response to a power requirement, the power plant further comprises a mechanism (27) which regulates the power requirement, and the controller (16) further functions to control the regulating mechanism (27), when the moisture in the fuel cell stack is frozen, to cause the fuel cell stack (1) to perform the intermittent electric power generation (S6, S21-S24)~~ is electrically connected to an electrical load, and the regulating mechanism comprises an inverter which regulates power supply to the electrical load from the fuel cell stack.

5. (Currently Amended) The fuel cell power plant as defined in Claim ~~4, wherein the fuel cell stack (1) is electrically connected to an electrical load (15), and the regulating mechanism (27) comprises an inverter (27) which regulates power supply to the electrical load (15) from the fuel cell stack (1)~~ 3, wherein the controller further functions to control the regulating mechanism to cause an output current of the intermittent electric power generation by the fuel cell stack to coincide with a current at which a decrease in an output voltage of the fuel cell stack occurs due to a diffusion overpotential.

6. (Currently Amended) The fuel cell stack as defined in Claim ~~4 or Claim 5, wherein the controller (16) further functions to control the regulating mechanism (27) to cause an output current of the intermittent electric power generation by the fuel cell stack (1) to coincide with a current at which a decrease in an output voltage of the fuel cell stack (1) occurs due to a diffusion~~

~~overpotential~~ 1, wherein the parameter is one of a temperature of the fuel cell stack and an atmospheric temperature.

7. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 1 through Claim 5, wherein the parameter is one of a temperature of the fuel cell stack (1) and an atmospheric temperature~~ Claim 1, wherein each of the fuel cells comprises an anode to which hydrogen is supplied and a cathode to which oxygen is supplied, the oxygen supplying mechanism is arranged to supply oxygen to the cathode, and the controller further functions to cause the oxygen supply mechanism, when the fuel cell stack performs the intermittent electric power generation, to increase an oxygen supply amount to the cathode to not less than 1.8 times of an amount which is required for power generation.

8. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 3 through Claim 5, wherein each of the fuel cells comprises an anode (2) to which hydrogen is supplied and a cathode (9) to which oxygen is supplied, the oxygen supplying mechanism (11) is arranged to supply oxygen to the cathode (9), and the controller (16) further functions to cause the oxygen supply mechanism (11), when the fuel cell stack (1) performs the intermittent electric power generation, to increase an oxygen supply amount to the cathode (9) to not less than 1.8 times of an amount which is required for power generation (S3)~~ Claim 1, wherein the power plant further comprises a switch which starts an operation of the power plant, and the controller further functions to determine if the moisture in the fuel cell stack is frozen immediately after the switch is turned on.

9. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 3 through Claim 5, wherein the power plant further comprises a switch (28) which starts an operation of the power plant, and the controller (16) further functions to determine if the moisture in the fuel cell stack (1) is frozen immediately after the switch (28) is turned on (S1)~~ Claim 1, wherein the power plant further comprises a sensor which detects a temperature of the fuel cell stack, the intermittent electric power generation comprises an output of electric current in the form of pulses, and the controller further functions to vary the width and the interval of the pulses according to the temperature of the fuel cell stack.

10. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 3 through Claim 5, wherein the power plant further comprises a sensor (19) which detects a temperature of the fuel cell stack (1), the intermittent electric power generation comprises an output of electric current in the form of pulses, and the controller (16) further functions to vary the width and the interval of the pulses according to the temperature of the fuel cell stack (1) (S6)~~ Claim 9, wherein the controller further functions to increase the width of the pulses as the temperature of the fuel cell stack increases.

11. (Currently Amended) The fuel cell power plant as defined in Claim ~~10, wherein the controller (16) further functions to increase the width of the pulses as the temperature of the fuel cell stack (1) increases (S6)~~ 9, wherein the controller further functions to decrease the interval of the pulses as the temperature of the fuel cell stack increases.

12. (Currently Amended) The fuel cell power plant as defined in Claim ~~10, wherein the controller (16) further functions to decrease the interval of the pulses as the temperature of the~~

~~fuel cell stack (1) increases (S6)~~ 1, wherein the power plant further comprises a volt meter which detects an output voltage of the fuel cell stack, the controller further functions to cause the fuel cell stack to perform the intermittent electric power generation by causing the fuel cell stack to stop electric power generation, after causing the fuel cell stack to start electric power generation, at a point where the output voltage of the fuel cell stack falls below a .predetermined voltage, and to restart electric power generation when a predetermined time has elapsed after electric power generation was stopped.

13. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 3 through Claim 5, wherein the power plant further comprises a volt meter (17) which detects an output voltage of the fuel cell stack (1), the controller (16) further functions to cause the fuel cell stack (1) to perform the intermittent electric power generation by causing the fuel cell stack (1) to stop electric power generation, after causing the fuel cell stack (1) to start electric power generation, at a point where the output voltage of the fuel cell stack (1) falls below a predetermined voltage (S23, S24), and to restart electric power generation when a predetermined time has elapsed after electric power generation was stopped (S21)~~ Claim 1, wherein the power plant further comprises a switch which starts an operation of the power plant, the intermittent electric power generation comprises an output of electric current in the form of pulses, and the controller further functions to count an elapsed time after the switch is turned on and increase the width of the pulses as the elapsed time increases.

14. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 3 through Claim 5, wherein the power plant further comprises a switch (28) which starts an~~

~~operation of the power plant, the intermittent electric power generation comprises an output of electric current in the form of pulses, and the controller (16) further functions to count an elapsed time after the switch (28) is turned on (S31) and increase the width of the pulses as the elapsed time increases (S32)~~ Claim 13, wherein the power plant further comprises a sensor which detects an atmospheric temperature, and the controller further functions to decrease the width of the pulses as the atmospheric temperature decreases.

15. (Currently Amended) The fuel cell power plant as defined in Claim ~~14, wherein the power plant further comprises a sensor (20) which detects an atmospheric temperature, and the controller (16) further functions to decrease the width of the pulses as the atmospheric temperature decreases (S32)~~ 1, wherein the power plant further comprises a switch which starts an operation of the power plant, the intermittent electric power generation comprises an output of electric current in the form of pulses, and the controller further functions to count an elapsed time after the switch is turned on, and decrease the interval of the pulses as the elapsed time increases.

16. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 3 through Claim 5, wherein the power plant further comprises a switch (28) which starts an operation of the power plant, the intermittent electric power generation comprises an output of electric current in the form of pulses, and the controller (16) further functions to count an elapsed time after the switch (28) is turned on (S31), and decrease the interval of the pulses as the elapsed time increases (S32)~~ Claim 15, wherein the power plant further comprises a sensor which detects an atmospheric temperature, and the controller further functions to increase the interval of the pulses as the atmospheric temperature decreases.

17. (Currently Amended) The fuel cell power plant as defined in Claim ~~16, wherein the power plant further comprises a sensor (20) which detects an atmospheric temperature, and the controller (16) further functions to increase the interval of the pulses as the atmospheric temperature decreases (S32)~~ 1, wherein each of the fuel cells comprises an anode to which hydrogen is supplied, the fuel cell power plant further comprises a hydrogen supply valve which regulates hydrogen supply to the anode, a change-over valve which resupplies an anode effluent discharged from the anode to the anode and a sensor which detects the pressure of the anode effluent, and the controller further functions, when the moisture in the fuel cell stack is frozen, to cause the change-over valve to recirculate the anode effluent to the anode and to cause the hydrogen supply valve to maintain the pressure of the anode effluent within a predetermined pressure range.

18. (Currently Amended) The fuel cell power plant as defined in ~~any one of Claim 3 through Claim 5, wherein each of the fuel cells comprises an anode (2) to which hydrogen is supplied, the fuel cell power plant further comprises a hydrogen supply valve (4) which regulates hydrogen supply to the anode (2), a change-over valve (6) which resupplies an anode effluent discharged from the anode (2) to the anode (2) and a sensor (21) which detects the pressure of the anode effluent, and the controller (16) further functions, when the moisture in the fuel cell stack is frozen, to cause the change-over valve (6) to recirculate the anode effluent to the anode (2) (S53) and to cause the hydrogen supply valve (4) to maintain the pressure of the anode effluent within a predetermined pressure range (S51,S55, S56, S58)~~ Claim 1, wherein the power plant further comprises a heater which heats the fuel cell stack using energy supplied from a source

other than the fuel cell stack and a sensor which detects a temperature of the fuel cell stack, and the controller further functions, when the moisture in the fuel cell stack is frozen, to heat the fuel cell stack using the heater while preventing the fuel cell stack from performing power generation when the temperature of the fuel cell stack is lower than a predetermined temperature, and to cause the fuel cell stack to perform the intermittent electric power generation when the temperature of the fuel cell stack has reached the predetermined temperature.

19. (Currently Amended) ~~The fuel cell power plant as defined in any one of Claim 3 through Claim 5, wherein the power plant further comprises a heater (103) which heats the fuel cell stack (1) using energy supplied from a source (104) other than the fuel cell stack (1) and a sensor (19) which detects a temperature of the fuel cell stack (19), and the controller (16) further functions, when the moisture in the fuel cell stack (1) is frozen, to heat the fuel cell stack (1) using the heater (103) while preventing the fuel cell stack (1) from performing power generation when the temperature of the fuel cell stack (1) is lower than a predetermined temperature, and to cause the fuel cell stack (1) to perform the intermittent electric power generation when the temperature of the fuel cell stack (1) has reached the predetermined temperature~~

A fuel cell power plant comprising:

a fuel cell stack comprising fuel cells which generate electric power under a supply of hydrogen and oxygen;

means for supplying oxygen to the fuel cell stack;

means for detecting a parameter for determining if moisture in the fuel cell stack is frozen;

means for determining if the moisture in the fuel cell stack is frozen based on the parameter; and

means for causing the fuel cell stack to perform intermittent electric power generation when the moisture in the fuel cell stack is frozen.

20. (Currently Amended) A control method of a fuel cell power plant, the power plant comprising a fuel cell stack ~~(1)~~ comprising fuel cells which generate electric power under a supply of hydrogen and oxygen and a mechanism ~~(11)~~ which supplies oxygen to the fuel cell stack ~~(1)~~, the method comprising:

detecting a parameter for determining if moisture in the fuel cell stack ~~(1)~~ is frozen;

determining if moisture in the fuel cell stack ~~(1)~~ is frozen based on the parameter ~~(S1)~~; and

causing the fuel cell stack ~~(1)~~ to perform intermittent generation of electric power when the moisture in the fuel cell stack ~~(1)~~ is frozen ~~(S6)~~.